

**CLAIMS**

1. A method for treating hair comprising applying a bioactive glass composition in an effective hair-enhancing amount to the hair for a sufficient  
5 time to form a coating on the hair comprising silicon, calcium and/or phosphorus ions.
2. The method of claim 1 wherein the coating on the hair further comprises sodium ions.
- 10 3. The method of claim 1 wherein the bioactive glass composition comprises a carrier and non-interlinked particles of bioactive glass comprising about 40 to about 86% by weight of  $\text{SiO}_2$ , about 4 to about 46% by weight  $\text{CaO}$  and about 1 to about 15% by weight  $\text{P}_2\text{O}_5$ .
- 15 4. The method of claim 3 wherein the bioactive glass composition has a pH below about 10.
- 20 5. The method of claim 3 wherein the bioactive glass composition has a pH between about 3 and about 9.
6. The method of claim 4 wherein the non-interlinked particles have a particle size less than about 90 microns.
- 25 7. The method of claim 4 wherein the non-interlinked particles have a particle size less than about 20 microns.

8. The method of claim 4 wherein the non-interlinked particles have a particle size less than about 5 microns.
9. The method of claim 1 wherein the bioactive glass composition  
5 comprises non-interlinked particles of bioactive glass comprising about 40 to about 68% by weight of  $\text{SiO}_2$ , about 10 to about 35% by weight  $\text{CaO}$ , about 1 to about 12% by weight  $\text{P}_2\text{O}_5$  and about 5 to about 30% by weight  $\text{Na}_2\text{O}$ .
10. The method of claim 1 wherein the coating is about 0.1 to about 5  
10 microns thick.
11. The method of claim 1 wherein the bioactive glass composition comprises bioactive glass extract and a carrier.
- 15 12. The method of claim 1 wherein the hair is human hair.
13. The method of claim 1 wherein the hair is damaged hair.
14. A method for treating hair comprising applying to the hair a hair  
20 treatment formulation comprising a carrier and an effective hair-enhancing amount of a bioactive glass composition comprising either non-interlinked particles of bioactive glass or a bioactive glass extract.
15. The method of claim 14 wherein the bioactive glass composition  
25 comprises non-interlinked particles of bioactive glass comprising about 40 to about 86% by weight of  $\text{SiO}_2$ , about 4 to about 46% by weight  $\text{CaO}$  and about 1 to about 15% by weight  $\text{P}_2\text{O}_5$ .

16. The method of claim 14 wherein the bioactive glass composition comprises bioactive glass extract comprising a solution of bioactive glass comprising about 40 to about 86% by weight of  $\text{SiO}_2$ , about 4 to about 46% by weight  $\text{CaO}$  and about 1 to about 15% by weight  $\text{P}_2\text{O}_5$ .
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17. The method of claim 14 wherein the hair treatment formulation is a shampoo or conditioner and the method further comprises rinsing the shampoo or conditioner out of the hair.
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18. The method of claim 14 wherein the hair treatment formulation is a gel, mousse, cream, lotion, air infused styling foam or spray composition and the method further comprises leaving the hair treatment formulation on the hair.
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19. The method of claim 14 wherein the hair treatment formulation is applied to damaged hair.
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20. The method of claim 14 wherein the hair treatment formulation further comprises anti-static agents, dyes, organic solvents or diluents, pearlescent aids, foam boosters, surfactants or cosurfactants, pediculocides, pH adjusting agents, perfumes, preservatives, proteins, skin active agents, suspending agents, styling polymers, sunscreens, thickeners, vitamins, biotin, collagen, amino acids, protein hydrolyzates, herbals, penetration enhancers, permeation/blinding agents, or viscosity adjusting agents.
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21. The method of claim 20 wherein the bioactive glass composition is present in an amount of about 2 to about 10% of the total composition.

22. The method of claim 21 wherein the pH is between about 3 and about 9.

23. A method for treating hair comprising applying a composition  
5 comprising an effective, hair-enhancing amount of bioactive glass particles to the hair surface for a sufficient amount of time to provide that a layer of hydroxyapatite or other calcium phosphate crystals are formed on the hair surface and ions from the bioactive glass penetrate layers of the hair to form hydroxyapatite crystals within the layers of the hair.

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24. The method of claim 23, wherein the composition comprising the bioactive glass particles further comprises an aqueous carrier and is applied to hair damaged by mechanical, chemical or environmental factors.

15 25. The method of claim 23, wherein the composition comprising the bioactive glass particles further comprises an aqueous carrier and is applied to hair to prevent damage by mechanical, chemical or environmental factors.

20 26. The method of claim 23 wherein the composition is applied to the hair to improve curl retention, color receptivity, color stability, color retention, shine, and/or strength.

27. The method of claim 23, wherein the composition further comprises biotin, collagen, amino acids, proteins, protein hydrolyzates, vitamins,  
25 herbals, penetration enhancers, permeation/binding agents, dyes or fragrances.

28. The method of claim 23, wherein the average particle size of the bioactive glass particles is less than about 20 microns.
29. The method of claim 23, wherein the average particle size of the  
5 bioactive glass particles is less than about 5 microns.
30. The method of claim 29, wherein the average particle size of the bioactive glass particles is less than about 1 micron.
- 10 31. The method of claim 23, wherein the composition comprising bioactive glass particles comprises non-interlinked particles of bioactive glass comprising about 40 to about 68% by weight of  $\text{SiO}_2$ , about 10 to about 35% by weight  $\text{CaO}$ , about 1 to about 12% by weight  $\text{P}_2\text{O}_5$  and about 5 to about  
15 30% by weight  $\text{Na}_2\text{O}$ .
32. The composition of claim 27 wherein the bioactive glass particles are present in the composition in an amount of about 0.5 to about 20 percent by weight of said composition.
- 20 33. The method of claim 23, wherein the hair is human hair.
34. The method of claim 23 wherein the hair is dog or cat hair.